REMARKS

An excess claim fee payment letter is submitted herewith for two (2) additional independent claims and seven (8) additional total claims.

Claims 1- 34 are all the claims presently pending in the application. Claims 1-3, 6-9, 12-16, 19-22 and 25-26 are amended to more clearly define the invention and claims 27-34 are added. Claims 1, 7, 14, 20, 27, and 34 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicant also notes that, notwithstanding any claim amendments herein or later during prosecution, Applicant's intent is to encompass equivalents of all claim elements.

Claims 1-26 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Masuda et al. reference in view of the Deguchi et al. reference.

This rejection is respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined by, for example, independent claim 1, is directed to an optical communication system for amplifying an optical signal propagating through an optical transmission line by using an optical amplifier in an optical repeater and emitting an amplified optical signal to an optical transmission line mounted at a back stage. The system includes a transmission line compensating device to generate control

light for producing a Raman amplification effect within the optical transmission line that is outside of the optical repeater based on a control signal superimposed on the optical signal and **input from the optical transmission line**.

Conventional optical communication systems have optical signal characteristics which are affected by leakage of pumping light emitted from an optical repeater and a loss spectrum that is exhibited intrinsically by the optical transmission line.

Moreover, as the number of wavelength-multiplexed signals increase, it becomes more difficult to properly calibrate a difference in output of each signal only using an end terminal device.

In stark contrast, the present invention does not necessarily rely only upon end terminal devices. Rather, the present invention provides a transmission line compensating device which provides a control light (e.g., a control signal superimposed on the optical signal and **input from the optical transmission line**) that produces a Raman amplification effect within the optical transmission lines that are outside of the optical repeater.

In this manner, the present invention may easily calibrate wavelength-multiplexed signals by providing a control light which enables the loss spectrum that is exhibited by the optical transmission lines to be compensated by the Raman amplification effect that is being produced while the control light propagates through the optical transmission line.

II. THE PRIOR ART REJECTION

The Examiner alleges that the Deguchi et al. reference would have been combined with

the Masuda et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

Specifically, the Masuda et al. reference is directed to addressing the problems of providing a wide flattened-gain bandwidth while maintaining a large optical amplifier saturation output power because of a large equalizer loss (col. 2, lines 20-25).

In stark contrast, the Deguchi et al. reference is directed to providing a light transmission system that has one or more repeating installations and a branching installation which branches an optical signal from the first terminal equipment to the third terminal equipment and transfers an optical signal from the third terminal equipment to the second terminal equipment and in which a supervisory control signal is accurately communicated from the terminal equipment to the repeating stations (col. 3, lines 7-17).

Therefore, one of ordinary skill in the art who was concerned with providing a wide flattened-gain bandwidth while maintaining a large optical amplifier saturation output power as the Masuda et al. reference is concerned with providing would not have referred to the Deguchi et al. reference because the Deguchi et al. reference is concerned with the completely different and unrelated problems of ensuring that a supervisory control signal is accurately communicated from the terminal equipment to the repeating stations. Thus, the references would not have been combined, absent hindsight.

Even assuming arguendo that one of ordinary skill in the art would have been motivated to combine these references, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features of the present invention including a transmission line compensating device that generates a control light (e.g., a control signal superimposed on the optical signal and **input from the optical transmission line)** for producing a Raman amplification effect within the optical transmission line that is outside of the optical repeater. As explained above, this feature is important for easily calibrating wavelength-multiplexed signals by providing a control light which enables the loss spectrum that is exhibited by the optical transmission lines to be compensated by the Raman amplification effect that is being produced while the control light propagates through the optical transmission line. (See, for example, page 8, line 29 - page 9, line 4; page 9, lines 24 - 28; et. seq.)

The Examiner does not allege that the Masuda et al. reference discloses this feature. The Examiner alleges that the Deguchi et al. reference discloses transmission line compensating device that generates a control light for generating a Raman amplification effect and the Examiner cites col. 8, lines 41-49 in an attempt to support this allegation. However, the Deguchi et al. reference clearly does not remedy the deficiencies of the Masuda et al. reference.

Indeed, contrary to the Examiner's allegation, col. 8, lines 41-49 of the Deguchi et al. reference only refers to a supervisory control signal and a response signal. The Deguchi et al. reference clearly explains that the supervisory control signal is "to observe operating conditions of the current, the excitation power, the repeating input power, and the output power, etc. of an

excitation laser diode (not shown) in the repeating installations 1 - 3" (col. 1, lines 50-55) and that the "repeating installations . . . demodulate the supervisory control signal (1), and . . . respond to the supervisory control signal . . . on the up line . . with the operating condition information (monitor signal) . . . as a response signal." (Col. 1, lines 59-67).

In other words, the Examiner's citation to col. 8, lines 41-49 provides absolutely no support for the allegation that the Deguchi et al. reference discloses a control light for generating a Raman amplification effect. Rather, the portion of Deguchi et al. reference that is cited by the Examiner merely discusses transmission of a supervisory control signal and response signal that are used to observe the operating conditions of repeating installations.

Indeed, neither of the supervisory control signal and response signal that are disclosed by the Deguchi et al. reference have anything at all to do with generating a Raman amplification effect.

Therefore, contrary to the Examiner's allegation, the Deguchi et al. reference clearly does not teach or suggest the features of the present invention including a transmission line compensating device which generates a control light (e.g., a control signal superimposed on the optical signal and **input from the optical transmission line)** for producing a Raman amplification effect within an optical transmission line that is outside of an optical repeater.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 1-26.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1-34, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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